

**(S7) Abstract:** Contemplated plants include a refluxed absorber and a distillation column, wherein the absorber is operated at a higher pressure than the distillation column to thereby produce a cryogenic pressurized lean gas. The lean gas is further compressed to a pressure suitable for liquefaction using energy from feed gas vapor expansion. Desired separation of C2 products is ensured by temperature control of the absorber and distillation column using flow ratios of various streams within the plant, and by dividing the separation process into two portions at different pressures.